

### ABSTRACT OF THE DISCLOSURE

An arrangement comprises an optical modulator for fast modulation which is provided in an interferometer arm of the interferometer arrangement for heterodyne detection. In one aspect, the modulator is used simultaneously for switching and/or beam attenuation in a laser scanning microscope. A method for operation of the arrangement by using such laser scanning microscope for single-photon and/or multiphoton fluorescence and using the heterodyne detection for referencing the fluorescence to regions deep in the specimen is also disclosed.

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